

ERRORS EXPOSED AND HOLLY MACHINERY VINDICATED.

REVIEW

Of the Minority Report of the Hyde Park (Ill.) Committee
on Water Works.

Office of *THE HOLLY MANUFACTURING COMPANY*,
LOCKPORT, N. Y., August 30, 1873. }

J. F. EDWARDS, Esq., *Atlanta, Ga.*,

I am in receipt of your letter of 15th inst., in which you state that a copy of the *Chicago Tribune* of a recent date has been forwarded to your city, containing a Report of the Hyde Park (Ill.) Committee on Water Works. You ask me to give you facts bearing upon the recommendation of that committee of the Worthington Pumping Engine instead of the Holly Machinery, and I readily comply with your request.

It is a very good answer to the one-sided and unfair statements of the so-called Report, to state the fact that immediately after its presentation the Common Council of Hyde Park expressed its opinion of it by two significant acts. The first was the discharge of the Committee, two only of whom could be induced to sign the document to which you call my attention, and the other was to pass a resolution by a vote of five to one, adopting the Holly plan and machinery, and directing a contract to be made for the same with this Company. This contract has subsequently been made and executed.

As you do not know, however, in Atlanta, as well as it is understood in Hyde Park, why this minority of the defunct Committee (Messrs. Hardy and Wadsworth,) undertook the agency of the Worthington Pumping Engine, an exposition of the errors and fallacies in their plea will doubtless be pertinent and useful.

The object of the so-called Report is to show apparently that in comparison with Worthington, the Holly Works are more expensive in original construction, and that the running expenses are also greater. In regard to the first point the Worthington agents cite the cost of the Holly Works in Dunkirk, N. York. They put the cost of the machinery at \$38,500, which is \$6,500 wide of the truth, and the aggregate cost of the entire Works at \$100,500, which is only \$500 variation from the fact. In connection with this, they take pains to add that the population of Dunkirk is 9,000, making the cost of the Works to be "\$11.16 per head of the entire population."

They present this in a way that is calculated to impress the uninitiated with the idea that on account of the extra first cost of the Holly Works above all others, and particularly over those of Worthington, the introduction of Holly imposes a burden grievous to be borne by the tax-payers. To test this point, let a comparison be made between the capacity and cost of these Dunkirk Works and the Worthington Works at Rahway, N. Jersey, which these gentlemen strongly recommend. These Rahway Works are new and are constructed upon the Holly plan of direct pumping, and as a consequence that city is defendant in a suit for infringement upon Holly's Patents. In January last, the Rahway Water Commissioners made their Report to the Council, and they put the aggregate cost of these Worthington Works, at that date, to be \$162,510.53, or 62 per cent. more than the Holly Works at Dunkirk. The guaranteed capacity of the Worthington Pumps at Rahway is 1,500,000 gallons in 24 hours—that of Holly at Dunkirk is 2,000,000—or $33\frac{1}{3}$ per cent. more. Rahway, according to the Report of Commissioners already quoted, has “more than 9 miles of street pipe laid,” but how much more they do not state. Dunkirk has more than ten miles. Rahway pipe is made of cement on sheet iron base, and costing one-third less than iron. Dunkirk is of iron itself. Brought to the same standard of comparison, the lauded Worthington Works at Rahway cost in the aggregate DOUBLE that of the Holly Works at Dunkirk, which these Worthington advocates seek to depreciate. The population of Rahway is 9,000—the same as Dunkirk—and if \$11.16 per each inhabitant is burdensome at Dunkirk, have these gentlemen no bowels of compassion for the unfortunate denizens of Rahway, who enjoy the luxury of Worthington Pumps at double that sum? The simple truth is that in Dunkirk and elsewhere, reduced cost, in comparison with other kinds of Water Works, is a strong recommendation of the Holly, and in proof of this examples might be multiplied almost indefinitely. It is only by the ignorant or willful suppression of facts that these Worthington agents make it seem to be otherwise.

The two Hyde Park gentlemen refer to their visit to Rock Island, (Ill.,) where they found Holly Works in operation. The most notable event which they chronicle in regard to this visit, is that they came in contact with an unknown individual who solemnly assured them there was “a tremendous bite in the price of the machinery.” The price of this machinery was \$32,000, with a guaranteed capacity of 2,000,000 gallons per 24 hours. The price which the Rahway Water Commissioners reported as paid Mr. Worthington for his 1,500,000 gallon machinery, was \$29,000. If there was a “tremendous bite” in the price of the Holly machinery at Rock Island, it is obvious that the patron of the gentlemen bit still more tremendously at Rahway!! At Hyde Park the Holly Company's proposition was \$36,000, and the Worthington \$47,500, for machinery to perform the same service. If the recommendations of the gentlemen had secured the purchase of the

Worthington machinery, the large excess above the Holly bid would have afforded a "tremendous bite" for each of these zealous advocates!!

The two committee men take pains to state that in Dunkirk and Rock Island the number of water-takers is small, and the cost for the supply of each considerably above the revenues received for water. In the former place, they put it at \$49.80 per year, and in the latter it is \$26.73 to each consumer. The adroit lawyer who drew the Report in question puts this disparity in a way to make it appear that this state of things is a peculiarity of Holly Works. If he had been candid and impartial, he would have stated that the same fact exists with all new works. It is true of the Worthington Works at Rahway and elsewhere, as well as the Holly Works at Dunkirk and Rock Island. Take for illustration the Works at Rahway, which these gentlemen so highly approve. In June last, a committee of mechanical experts of Dayton, Ohio, was appointed by the Common Council of that city to make a tour of examination with reference to the selection and purchase of additional machinery rendered necessary by the demand for water above what was provided for in the original works constructed by the Holly Company. That committee made an extensive tour, in which they inspected machinery made by the Holly Company, by Worthington, and other manufacturers. In their Report this committee say: "Our opinion is, after a careful examination, that a direct acting duplex pump is not the best for the direct pumping system in use in this city, though probably well adapted to pumping in Reservoirs and stand pipes," and your committee therefore "recommend the adoption of the new direct acting pumps as now made by the Holly Manufacturing Co., as the pumping engine best adapted to the system of water supply in use in this city." This unanimous Report of the committee was adopted by the Council, and a contract has since been made in accordance with its recommendation. Of the operation of the Works of Rahway, the Dayton committee say: "We found the pumps delivering 143,000 gallons, on the average, in 24 hours at a pressure ranging from 30 to 40 pounds, with an expenditure of 1200 pounds of best Anthracite coal." In their remarkable susceptibility for errors, the Hyde Park gentlemen declare that these pumps are delivering "460,800 gallons of water per day, at fire pressure, *if needed*, with the use of one-half ton of coal in 24 hours." The statement of the Dayton committee was taken from the record of the engineer in charge, and there is no doubt of its accuracy. The Hyde Park gentlemen put the pumping at Rock Island at from one hundred to one hundred and fifty thousand gallons per day. They assume two hundred as the number of water-takers. The whole cost of maintaining the works for thirteen months, they further declare, to have been \$5,854, or at the rate of \$5,346.17 per year. The annual running expenses of the Rahway Worthington Works is stated, on good authority to be \$5,554.90, or a trifle more than at Rock Island. The Hyde Park advocates of Worthington declare that in Rock Island it has cost, since the Holly pumps started \$26.73 for each consumer. Upon the same basis of

calculation, it costs \$27.77 for each consumer in Rahway. If a calculation for interest on the additional cost of the works was added, the excess in Rahway would be largely increased.

The Hyde Park gentlemen doubtless ascertained but suppressed the cost of operating the Rahway Works, for to have stated it would have been an acknowledgment that it was fully equal to the Holly Works at Dunkirk and Rock Island. In all these places, as the number of water-takers increase, it will add to the revenues and reduce the average cost to each consumer. It will also have an important bearing upon the cost of pumping per million gallons. The Hyde Park gentlemen very unjustly take the cost of pumping in the new Works of Holly and compare it with Works using the Worthington pumps, and running nearly or quite up to their capacity, and parade the difference as showing superiority of his Pump over Holly in duty. This gross unfairness is exposed in the Annual Report of the Boston Water Works Board for 1871-2, in the following paragraph:

"The cost of pumping per 1,000,000 gallons, 1 foot high, is 37 cents; which appears high when compared with the cost in other large Works in this country. The cost in Philadelphia varies from 23 cents to 11 cents. This variation is not due to the character of the Pumps or Engines alone, BUT DEPENDS UPON THE RELATIVE AMOUNT OF WORK DONE AS COMPARED WITH THE CAPACITY OF THE ENGINES."

The city of Sacramento, (Cal.,) has for years been supplied with water by Worthington machinery, which pumped it into a reservoir, from which it was distributed by gravitation. It was a very unreliable supply, and the city has just substituted Works on the Holly plan of direct pumping by Holly machinery. The Sacramento *Bee*, of a recent date, states that "THE COST FOR FUEL IS MUCH LESS THAN IT WAS IN THE OLD WORKS, WHICH IN SUMMER DID NOT FURNISH HALF A SUPPLY." Here it will be seen that with Holly Machinery, commencing its operation with some 4,000 consumers, and pumping from the start nearly up to its capacity, "the cost for fuel is much less" than it was in the old works of Worthington, which it supercedes. Of course it would not have suited the purpose of the Hyde Park Committee to let any such comparison creep into their *ex parte* paper!!

In this connection it is pertinent to refer to this Holly machinery at Sacramento with regard to duty. The usual method of determining this is by ascertaining the number of pounds of water lifted to an equivalent of one foot high, with 100 pounds of coal. The Report of the engineer of the Sacramento Works, for the week ending August 17th, 1873, is before me. It shows that 15,841,000 gallons of water were pumped during the seven days, against a pressure equal to 95 feet elevation, with a consumption of 28 cords of pine wood as fuel. This wood weighs 1800 pounds per cord, and its value for generating steam, in comparison with coal is in the ratio of 2 and 3-10ths pounds of wood to one pound of coal. (See Haswell's standard work on Hydraulics, page 565.) Making this allowance for the difference between wood and coal, and it shows a lift of 50,400,000 pounds one foot high, with 100

pounds of coal. This, it will be observed, is not a fancy test, but regular every-day performance of the machinery, and the Hyde Park experts would need to make a long journey and largely increase their mechanical knowledge before they find the equal of this performance by any pumping machinery. By way of applying another test of their method of dealing with Holly machinery, suppose we compare the above duty with that of the Worthington Pumps at Rahway, where the pumping in the month of May last, amounted to only 9,923,800 pounds lifted one foot high with 100 pounds of coal. Such a comparison would be unfair to Worthington Pump, for the reason advanced in the above extract from the Report of the Boston Water Works Board, but all the comparisons of these Hyde Park experts are just as unfair as it would be to compare the duty obtained by the Holly machinery at Sacramento, working up to nearly its capacity with the Worthington machine, at Rahway, with a consumption of water which barely keeps the Pumps in motion. In making such comparisons as they do in their Report, the Hyde Park agents of Worthington show themselves to be either ignorant or unscrupulous. Upon one or the other of the horns of this dilemma they must hang.

The gentlemen refer to quite a number of places where Worthington Pumping Engines are in use, and state economical and satisfactory performance of duty. The best specimen is the Roxborough engine, in Philadelphia, which, it is stated, "raises and distributes 1,000,000 gallons 100 feet high for less than ten cents per 1,000,000 gallons." This engine is neither better or worse than the Worthington Engine at Rahway, which, like Holly at Dunkirk and Rock Island, pumps direct and supplies a small number of water-takers. Now if these oracles on mechanism had truthfully shown that this Worthington Pump at Rahway was supplying water at a pumping expense of 10 cents per million, or anywhere near that sum, it would indeed have been a strong point in support of their recommendation of the Worthington pumps. Do they do it? No, verily! and for reasons which will appear when it is stated that the cost of pumping in Rahway during the month of May last was equal to \$70 85 per million gallons!!! During the same month the pumps lifted only 9,923,800 pounds one foot high with each 100 pounds of coal, which is far less than what is reported for the same machinery in old works, and running up to full capacity. As consumption increases, this duty will be improved, and precisely so will it be with the Holly machinery, which the Hyde Park gentlemen seek to depreciate by instituting comparisons with the works of Worthington, running under conditions which are most favorable for economical duty.

The Hyde Park gentlemen give a narrative of an inspection of a Worthington Pump attached to the car Works in Michigan City, run by steam, taken from the engine used for propelling the machinery. They state the cost of the pump to have been \$900, and its performance was throwing three streams more than 100 feet high through inch nozzles. The Holly Company

furnish a Pump at \$600, which will easily perform the same service under like circumstances. The gentlemen innocently add that "the engine went on with its work without any *apparent* diminution of power because of the pump attached," a remark which plainly shows the exploring gentlemen to be far more familiar with points of law and the price of real estate than the movements of machinery. The fact is the Pump did not take power from the Engine which drove the car works machinery, but from one attached to the Pump itself, and the blunder is the more glaring because the Pump is described by the gentlemen as embracing "*steam* and water cylinders and pistons." It is a fair specimen, however, of their loose and unreliable allegations in other particulars.

The gentlemen devote a paragraph to their visit to the Holly Works in Saginaw, Michigan. The authorities of that city courteously ordered out their Fire Department and made a splendid display of ten fire streams from as many hydrants, located on the principal streets. The exhibition pleased everybody but the visitors from Hyde Park, who in return for the courtesy shown them, found fault that the streams were not differently located. The exhibition of throwing water did not greatly interest them for another reason. During the performance they made the brilliant discovery that the engineer in charge of the machinery had detached his condenser, and was running *for* high pressure *under* high pressure. It is, to be sure, the universal practice of engineers, and yet the knowledge of it burst upon these Hyde Park experts with a force which incapacitated them from seeing or correctly describing anything else in the Saginaw machinery !!!

On their way to Saginaw, the gentlemen made a brief stop at Jackson, and took a hurried look at the Holly Machinery in operation in that city. They do not report anything which impressed them so much as the variations in the pressure upon the pipes at each revolution of the engine. If the gentlemen state this thing in accordance with the fact, it is an exceptional case of rare occurrence. It is not peculiar, however, to Holly machinery. In the Dayton Report already quoted from, it is stated that "at Rahway there was considerable variation in pressure, and the engineer informed us that the variation was largely increased as the pressure was raised to the fire standard." Another gentleman of thorough mechanical knowledge who recently inspected the Worthington Works at Rahway, states: "Their great waste of power, owing to the manner of controlling the pressure, is enough to condemn them. On getting up a fire pressure of 100 pounds, the pressure gauge marked a variation of 60 pounds, (from 50 to 110), at each stroke of the piston."

If the model Worthington machinery at Rahway does not perfectly control pressure in the pipes, surely these gentlemen might excuse a little latitude in what they call the imperfect Holly Works at Jackson.

The Hyde Park gentlemen lay great stress upon the opinions of certain engineers who adhere to the old system in which they were educated, and to

which they have become inveterately attached by long and profitable experience. In spite of all their efforts the new system of Holly is growing in popular favor, and its superior advantages over the old method of water supply, has within a brief period made a call upon the Holly Manufacturing Company for machinery equal or greater than the aggregate furnished by all the other manufactories in the United States. Compelled to concede the superior merit of the Holly plan, the engineers referred to by the Hyde Park gentlemen are just now making a systematic and fierce onslaught upon the Holly machinery. They are in extacies if they find the new Works of Holly use a few more pounds of coal to lift a million gallons of water than the long established Works of Worthington, running up to their full capacity.

If this were true, the equivalent is received in the increased fire protection which it brings to communities which throw its protecting shield over their property. Referring to the difference between the revenues and expenses at Dunkirk, the Hyde Park committeemen sneeringly add "this loss is the cost of the so-called for fire service." In Dunkirk, however, this is not considered as oppressive. The *Dunkirk Advertiser* of a recent date credits the Holly Works with the prompt suppression of two fires, and saving of \$130,000 of property, or 30 per cent. more than their entire original cost.

A letter which has just come to hand from a trust-worthy citizen of Rock Island, says: "The works are doing splendidly and are paying first rate. They will this year pay running expenses, interest on the construction Bonds, and have money left." The Mayor of Dayton, Ohio, in a recent letter giving answers to inquiries from a gentleman in Lafayette, Indiana, says: "We have had no fears of fires since the introduction of the Holly Works. We always quench a fire in a few minutes after getting streams on to it." The Mayor of Bay City, in a letter of the date of Aug. 14th, to a citizen of South Bend, Indiana, in which he narrates the performance of the Holly Works, at a recent fire, in supplying good fire service streams from a hydrant $3\frac{1}{4}$ miles from the machinery and through 1500 feet of hose attached, adds: "Our works thus far have met our expectations fully and are removing prejudices as rapidly as they become known!" The above extracts are similar to the evidences which come from every quarter, where the Holly Works are in operation. Communities which enjoy the benefits they bring, in reliable water supply and unequalled fire protection, fully appreciate them and are enthusiastic in their praise. The sneers and sympathies of Messrs. Hardy & Wadsworth are alike lost upon them.

I am sure enough has been said to thoroughly expose the dastardly attempt of Messrs. Hardy & Wadsworth by reckless statements and unfair comparisons to depreciate the Holly machinery and seriously injure its manufacturers. It signally failed in the accomplishment of that purpose at Hyde Park. It remains to be seen whether the same result will not follow from the sending the envenomed document to Atlanta and elsewhere. Thorough and impartial examination and comparison will invariably de-

monstrate that the Water Works machinery manufactured by the Holly Manufacturing Company, is fully equal in style, finish, adaptation, durability and duty under the same conditions of service, with that of any other produced in the country.

Respectfully Yours,

T. T. FLAGLER, *President.*

While the question was still undecided in Hyde Park, the following appeared in a leading paper of Chicago :

(From the Chicago Times.)

WATER WORKS AT HYDE PARK.

The trustees of Hyde Park are investigating the question of water-works; and, at present, seem very favorably inclined to the Holly system. This tendency is in the right direction. There can be no doubt as to the superiority of this system over that of the reservoir and stand-pipe; the latter of which, in this city, has never proved itself anything save a very costly failure. The expense of the stand-pipe is not less than four times that of the Holly, and then, even with this difference against it, will accomplish infinitely less. The Holly system does away wholly with our expensive steam fire-engines, and thereby economises an enormous outlay. The automatic adjustability of the Holly is also of immense value, as it adapts itself to the demand for water, and is equally ready to furnish the amount required to fill a drinking pitcher, or for a vast conflagration.

If the people of Hyde Park are wise, they will adopt the Holly pump and its connections. Could Chicago have accepted the proposition of the Holly company, viz., the erection of their works upon a square mile of the most inflammable area of the city, we should have had a test of the utmost value. It is a test which the Holly people were perfectly willing to undertake, but which Chief Engineer Cheeseborough and the common council, for reasons satisfactory only to themselves, were not willing should take place. This test, which would have cost Chicago next to nothing, was not honored even with a consideration; and mainly, we suppose, because the aldermen saw no money in it.

Our present system of employing enormous engines to pump water up in a pipe, and then employing a vast army of engines, horses, and men to pump it where wanted, is one of the most expensive and least efficient in existence. It has never proved itself equal to a great emergency; and in lesser cases, it has always done more damage than would have been done by the fire which it subdued. On the other hand, in no place where the Holly system is in use, has a fire ever gone beyond the building in which it originated. These facts should decide the people of Hyde Park as to what system they need. Let them repudiate the cumbrous, expensive, and inefficient stand-pipe and reservoir systems, and take one which ample experience has shown to be the best in use.